

REMARKS

Applicant thanks the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this Amendment.

Status of the Claims

Claims 1-21 are pending in the application. Claims 5-12 and 15-17 have been withdrawn from consideration by the Examiner. Claims 1-4, 13 and 14 are rejected. Claims 18-20 are new and find support at pages 15 and 16 of the specification and in Figure 4. New claim 21 finds support in Figures 4-6.

Rejection Under 35 U.S.C. 103(a) Over Applicants Disclosure in View of Kamimura

Claims 1-4 and 13-14 are rejected under 35 U.S.C. 103(a) as being obvious over Applicant's disclosure as set forth in Figures 1 and 2 in view of Kamimura (JP 2000-275629). Applicant traverses this rejection and respectfully requests reconsideration and withdrawal thereof.

The Present Invention and Its Advantages

The present invention pertains to a liquid crystal display device having first and second substrates separated by a liquid crystal layer. A first polarizer is formed under the second

substrate (opposite from the liquid crystal layer), and the first polarizer is made of cholesteric liquid crystal. Color filters facing the first substrate are formed on the second substrate, and each color filter has a primary color. A black matrix is formed in the boundaries between the color filters on the second substrate, and the black matrix is made of the same material as the first polarizer, i.e., a cholesteric liquid crystal. A back light device is also under the second substrate.

An important aspect of the invention is that the black matrix 152 is formed of cholesteric liquid crystal, as is discussed at page 13 of the specification. Further, the black matrix 152 is actually a one-layered cholesteric liquid crystal layer, although it is referred to as a black matrix in the specification.

An additional important characteristic of the invention is the interplay of the cholesteric liquid crystal polarizer 150 and the black matrix 152. As is described at pages 14 and 17 of the specification, the cholesteric liquid crystal polarizer serves to transmit the left-handed circularly polarized light, and the black matrix 152 serves to reflect the left-handed circularly polarized light, or vice-versa. That is, the black matrix has a light-reflecting characteristic different from the cholesteric liquid crystal polarizer.

Distinctions of the Invention Over Applicants Disclosure and Kamimura

The Examiner uses the Applicant's disclosure for the conventional elements of a liquid crystal display. The Examiner admits that the Applicant's disclosure fails to reveal as prior art that the black matrix is made of a cholesteric liquid crystal. However, the related art liquid crystal displays discussed in the specification are presented to show the disadvantages of the conventional art liquid crystal displays. There is no admission in the specification that these related art liquid crystal displays are prior art to the invention. Therefore, the Examiner's use of the Applicant's disclosure as prior art is improper. Accordingly, the rejection should be withdrawn for at least this reason alone.

The Examiner then turns to Kamimura for teachings pertaining to black matrices. Figure 1 of Kamimura shows a black matrix formed on an upper part of a lower substrate 1, and a polarizing plate 7 is formed on a lower part of the substrate 1.

Kamimura fails to teach that a polarizer is formed from a cholesteric liquid crystal.

In contrast, the invention has a black matrix 152 that is actually a one-layered cholesteric liquid crystal. The invention additionally has a cholesteric liquid crystal polarizer 150. The black matrix has a light reflecting characteristic that is different from the cholesteric liquid crystal polarizer. As

described at pages 14 and 17 of the specification, the cholesteric liquid polarizer 150 serves to transmit the left-handed circularly polarized light and the black matrix 152 serves to reflect the left-handed circularly polarized light, and vice-versa.

In contrast, Kamimura fails to disclose or suggest these reflection and transmission properties and additionally fails to disclose or suggest the polarization inversions shown in Figure 4 and discussed at pages 14-16 of the specification. As evidence of Kamimura's failures, the Applicant has translated paragraphs 59-62 of Kamimura, which is attached to this paper as Exhibit 1.

Yet further, the black matrix 152 of the invention has one layer, as can be readily observed in Figures 4-6 of the application. In contrast, Figures 3-6 of Kamimura show a black matrix 5 formed by sequentially stacking three light filters 61a, 62a and 63a. In comparison, the invention has a one-layered black matrix 152 that reflects left or right-handed circularly polarized light, and this one-layered black matrix 152 additionally interplays with the cholesteric liquid crystal color filter 150.

As has been shown, the Applicant's disclosure and Kamimura, even if they could be combined, would fail to motivate a person having ordinary skill in the art to produce the invention as is embodied in independent claim 1. Claims dependent upon claim 1 are patentable for at least the above reasons alone. Accordingly, this rejection is overcome and withdrawal thereof is indicated.

**Prior Art Not Relied Upon By the Examiner**

The prior art made of record and not relied upon by the Examiner indicates the status of the conventional art which the invention supercedes. Accordingly, no additional remarks are necessary.

**Information Disclosure Statement**

Applicant thanks the Examiner for considering the Information Disclosure Statement filed December 17, 2001 and for making the initialed PTO-1449 form of record in the application in the Office Action mailed May 9, 2002.

**Drawings**

The Examiner is respectfully requested to indicate whether the drawing figures are acceptable.

**Conclusion**

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


Respectfully submitted,

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Attachments: Version with Markings to Show Changes Made  
Exhibit 1

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 18-21 have been added.